### Fire Blight Management

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#### Fire blight

- Caused by the bacterium *Erwinia amylovora*
- Canker, blossom, shoot, fruit, and rootstock phases





#### Fire Blight Disease Cycle



## Fire Blight Management in the Orchard

#### 1. Holdover cankers

- Prune out cankers
- Copper applications (before green tip)
- Apply insecticides (before bloom)
- 2. Blossom blight and traumatic injury
  - Apply antibiotics
  - Don't rely on biocontrols integrate with antibiotics
- 3. Shoot blight
  - Apply Apogee/Kudos plus Actigard
  - Balanced fertility

#### Antibiotics for Blossom Blight Management

Antibiotic	Product	Rate	Good to Know
Streptomycin	Streptomycin 17	1 lb/A	Systemic activity
Kasugamycin	Kasumin	64 fl oz/A	Light sensitive
Oxytetracycline	Mycoshield FireLine	1 lb/100 gal/A	Inexpensive

- Addition of a non-ionic surfactant recommended (Regulaid, 1 pt/A)
- Do not use treated crops for animal feed or allow animals to graze in treated orchards

#### Risk Assessment Models for Blossom Blight Management

- •Available through NEWA
  - newa.cornell.edu
  - Select Ohio and fire blight
- •Model considers four variables:
  - 1. First bloom date
  - 2. Fire blight history in orchard
  - 3. Temperature for epiphytic growth
  - 4. Blossom wetting period





### Fire Blight Risk Prediction Models

Date (2021)	Cougar Blight 4-Day DH Risk Levels: Low Caution High Extreme	Infection Potential EIP value Risk Levels: Low Moderate High Infection
May 18	393	94
May 19	622	174
May 20	872	254
May 21	1112	323
May 22	1249	359
May 23	1344	390
May 24	1307	365
May 25	1412	399

## Risk-based Applications of Antibiotics

Risk Level	EIP	Action
Low	<40	None
Moderate (Caution)	40 -70	Apply oxytetracycline or a biological
	70-100	Apply streptomycin
High	>100	Apply streptomycin or Kasumin
Extreme (Infection)	>200	Apply streptomycin or Kasumin

### **Shoot Blight Control**

- Three strategies
  - Slow shoot growth
  - Shorten nodes and thicken cell walls
  - Boost plant defense responses

## Shoot Blight Management Using a Balanced Fertility Program

- •Young shoots and suckers are very susceptible to infections
- Apply nitrogen based on soil and tissue tests-too much nitrogen is not good
- •Apply fertilizer in late fall or early spring



### **Prevention of Shoot Blight**

- Apply plant growth regulator
  - prohexadione-calcium (Apogee/Kudos)
  - inhibit the biosynthesis of gibberellin
  - Shortens nodes



#### The "Apogee Affect"



Photo courtesy of George Sundin, Michigan State Univ.

# Effect of Apogee on Terminal Growth & Fire Blight of Rome Apple Trees, OARDC, 2002

Treatment	Mean Shoot Length <b>(cm)</b>	No. Blighted Shoots/Tree
Streptomycin	23.2 a	75 b
Serenade	23.5 a	249 a
Streptomycin + Apogee	15.0 b	19 c
Non-treated control	23.2 a	258 a

### Shoot Blight Spray Program

- •Apogee/Kudos (2 oz) + Actigard (1 oz)
  - Begin at king bloom petal drop
  - Apply weekly
  - 3 to 4 applications



#### Common Questions



#### What if I do nothing?

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2021, Crimson Crisp

### What if I do nothing?



### Should I prune out infections in the summer?



## When should I remove a tree with fire blight?

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#### •When root stocks are infected



Apple Rootstock	Level of Resistance
Bud.9	S
Bud.118	MR
Geneva 11	R
Geneva 16	R
M.7	R
M.9	S
M.26	S
MM.106	MR
MM.111	MR

## When should I remove a tree with fire blight?

 If you have a very susceptible variety and all other strategies have failed

Apple Variety	Level of Resistance
Fuji	VS
Gala	VS
Honey Crisp	MS
Golden Delicious	MS
Gold Rush	MR
Liberty	MR
McIntosh	MS
Jonathan	VS
Red Delicious	MR



#### FRUIT PATHOLOGY LAB

#### Safe Fruit Production

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